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Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

QUARTERLY PROGRESS REPORT

Project Title:	Seismic Analysis of Retaining Walls, Buried Structures, Embankments, and Integral Abutments		
RFP NUMBER: 2000-25	NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel		
TASK ORDER NUMBER/Study Number: Task Order No. 127 / 4-26995	PRINCIPAL INVESTIGATOR: Dr. Husam Najm		
Study Start Date: 01/01/2003 Study End Date: 12/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Review on Seismic Design of Abutments, Retaining Structures, Buried Structures, and Embankments	10	30	50	5
Provide Analysis, Design, and Detailing of Free Standing Abut and Retaining Walls	20	25	22	6
Provide Analysis, Design, and Detailing of Integral (Diaphragm) Abutments	20	25	22	6
Provide Guide Specifications Manual to Assist Designers in Designing Free-Standing and Integral Abutments, Embankments, Buried Structures and Retaining Walls	30	0	0	0
Prepare Progress reports	10	2	4	4
Prepare Technical Memorandum and Final Report	10	0	0	0
TOTAL	100%	13	13	21

1. Progress this quarter by task:
Run bridge design for several cases comparing proposed and old LRFD criteria. This will include bridges in North, Central, and South Jersey. It will evaluate the impact of soil conditions, EQ intensity, and detailing requirements on typical bridges in those zones and how the design compares with that of the existing specs. A comparison of results and cost will be presented to show the impact of proposed 12-49 provisions of seismic design of bridges in various NJ zones.
2. Proposed activities for next quarter by task:
Prepare design criteria. Prepare a detailed design example. Work on buried structures.
3. List of deliverables provided in this quarter by task (product date):
None
4. Progress on Implementation and Training Activities:
None

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5. Problems/Proposed Solutions:

None

6. Budget Summary*

Total Project Budget (# of years)	1 Year	\$173,017
Total Project Expenditure to date		\$33,332
% of Total Project Budget Expended		19%
Task Order Number/Study Number:		127 / 4-26995
Current Task Order Budget (# of years)	Year 1	\$173,017
Actual Expenditure to date against current task order		\$33,332
% of current task order budget expended		19%

* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.

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QUARTERLY PROGRESS REPORT

Project Title:	A Proposal for the Development of High Performances Concrete for Transportation Structures in New Jersey		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Tony Chmiel		
TASK ORDER NUMBER/Study Number: 62 / 4-23806	PRINCIPAL INVESTIGATOR: Hani Nassif		
Study Start Date: 04/30/2001 Study End Date: 08/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Selection of Final Mixes	5%	0%	100%	5%
Collection of Data and Preparation of Samples During the Field Samples	20%	0%	85%	17%
Evaluation of Field Samples	10%	0%	80%	8%
Creep and Shrinkage Set-up and Testing	50%	5%	95%	47.5%
Preparation of Specifications for HPC	10%	20%	70%	7%
Final Report	5%	30%	60%	3%
TOTAL	100%			87.5%

1. Progress this quarter by task:

- A. The creep chamber is completely overhauled and updated with new Humidifier, Refrigeration system, and condenser unit.
 1. Lightweight aggregate was used for mixing with w/c 0.39 and 0.29 and with combination of type I and type III cement.
 2. 3/4" and 3/8" aggregates were also used to mix with water cement ratio of 0.29 and with type I and type III cement, respectively.
 3. Mixes were done for creep tests with variation in silica fume and fly ash. Silica fume was varied from 5, 10, 15% and fly ash was varied from 10, 20 and 30%.
 4. Mixes were done for Elastic Modulus tests with variation in silica fume and fly ash. Silica fume was varied from 5, 10, 15% and fly ash was varied from 10, 20 and 30%. Also a combination of fly ash and silica fume were used.
 5. The mixes for creep were tested for strength, shrinkage and rapid chloride permeability tests and the other mixes had additional tests of freeze and thaw, autogenous shrinkage and scaling.
 6. The lightweight aggregate has lower strength when compared to 3/8" or 3/4" inch aggregate. The range is between 5000-8000 psi while similar normal high performance concrete mixes had strength between 10000-12000 psi depending on water cement ratio and the type of aggregate and cement used.
 7. Loading of creep cells is done and creep tests are underway.

2. Future Tasks:

1. Comparing restraint shrinkage to free shrinkage. Effect of using different cylinder size is also investigated.
2. Field mixed by different concrete ready mix plant of selective mixes. The plants are selected based on their capabilities to mix HPC.

3. Proposed activities for next quarter by task

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- A. Continuing collecting creep and shrinkage data.
 - B. Arrange for field mixing day with Clayton Concrete and Bayshore Concrete producers batching plant.
 - C. Submit a draft copy of final report on HPC project.
 - D. Coordinate HPC Workshop for Fall 2003 in coordination with NJDOT and FHWA.

3. List of deliverables provided in this quarter by task (product date)

N/A

4. Progress on Implementation and Training Activities

N/A

5. Problems/Proposed Solutions

N/A

6. Budget Summary*

Total Project Budget (# of years)	1.5 Years	\$384,320.00
Total Project Expenditure to date		\$363,981
% of Total Project Budget Expended		95%
Task Order Number/Study Number:		62 / 4-23806
Current Task Order Budget (# of years)	Year 1.5	\$384,320.00
Actual Expenditure to date against current task order		\$363,981
% of current task order budget expended		95%

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QUARTERLY PROGRESS REPORT

Project Title:	Monitoring of Construction Doremus Avenue Bridge Structure		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Nick Vitillo		
TASK ORDER NUMBER/Study Number: 99 / 4-26676	PRINCIPAL INVESTIGATOR: Hani Nassif		
Study Start Date: 01/01/2001 Study End Date: 12/31/2004	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search and Field Coordination	5%	0%	100%	5%
Finite Element Model Development and verification (Substructure & Superstructure)	10%	20%	90%	9%
Develop Instrumentation Plan and Install Sensors	20%	15%	95%	19%
Parametric Study	20%	10%	80%	16%
Perform Monitoring and Data Collection	25%	40%	60%	15%
Prepare Recommendations to Modify AASHTO and NJDOT's Procedures	5%	0%	0%	0%
Comparison of Analytical and Experimental Results	5%	10%	60%	3%
Progress Reports	5%	5%	95%	4.75%
Final Report	5%	0%	0%	0%
TOTAL	100%			71.75%

1. Progress this quarter by task

A. Testing and installation of sensors on Doremus remains not possible due to delays in construction.

B. WIM System

1. The portable WIM system is now not functioning because one of the piezoelectric sensors was exposed and the other one was cut. These were caused by wear and tear.
2. Permanent bending plate WIM system in South Abutment Approach is still not working due to delays in construction.

C. Fatigue System

1. Fatigue phone connection was repaired by Verizon technician.
2. Fatigue Data continues to be collected weekly.

D. Contractor was not responding to Rutgers' request to install sensors and help with man lift and test trucks.

2. Proposed activities for next quarter by task

1. Testing Stage II will depend on construction progress and future delays.
2. Coordinate with contractor to use man lift for installation of additional sensors.
3. Devise a pre-, during, and post rehabilitation monitoring scheme.
4. Getting the WIM permanent bending plate system to start working.

3. List of deliverables provided in this quarter by task (product date)

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4. Progress on Implementation and Training Activities

5. Problems/Proposed Solutions

6. Budget Summary*

Total Project Budget (# of years)	4 Years	\$581,825
Total Project Expenditure to date		\$359,255
% of Total Project Budget Expended		62%
Task Order Number/Study Number:		99 / 4-26676
Current Task Order Budget (# of years)	Year 1, 2, 3, and 4	\$581,825
Actual Expenditure to date against current task order		\$359,255
% of current task order budget expended		62%

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QUARTERLY PROGRESS REPORT

Project Title:	Instrumentation and Monitoring of Bridge Approach Slabs – Phase II		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Robert Sauber		
TASK ORDER NUMBER/Study Number:	PRINCIPAL INVESTIGATOR: Hani Nassif		
Period Starting: 9/1/2002 - 9/31/2004 (Start-End Date of Study)	Period Ending: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Instrumentation Plan and Field testing	30%	60%	18%	18%
Calibration of Sensors and DAS	20%	20%	4%	4%
Data Collection and LTRM	20%	10%	2%	4%
FEM Verification	10%	4%	4%	8%
Progress Reports & Technical Memorandum	15%	20%	3%	6%
Final Report	5%	0%	0%	0%
TOTAL	100%			40%

1. Progress this quarter by task:

- Download field data manually every week.
- Visually monitor slabs for cracking.
- Validated FE Model and compared experimental and analytical results.

2. Proposed activities for next quarter by task

- Relocate equipment box from temporary location to south abutment wingwall.
- Continue FE modeling and verifying reading from various sensors.
- Use the 3-D model with continuous solid model to compare with experimental results as well a 2-D model.
- Improve design alternatives based on new data.

3. List of deliverables provided in this quarter by task (product date)

N/A

4. Progress on Implementation and Training Activities

N/A

5. Problems/Proposed Solutions

N/A

6. Budget Summary*

Total Project Budget (# of years)	1 Year	\$
Total Project Expenditure to date		\$
% of Total Project Budget Expended		%
Task Order Number/Study Number:		
Current Task Order Budget (# of years)	Year 1	\$

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Actual Expenditure to date against current task order	\$
% of current task order budget expended	%

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QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Adaptive Control Strategies for NJ Highways		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Karl Brodtman		
TASK ORDER NUMBER/Study Number: 101 / 4-26682	PRINCIPAL INVESTIGATOR: Kaan Ozbay		
Study Start Date: 01/01/2001 Study End Date: 12/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1: Literature Survey	10%	30%	100%	10%
Task 2: Inventory Assessment	25%	20%	100%	25%
Task 3: Site Selection	5%	0%	100%	5%
Task 4: DSS Development	30%	5%	83%	25%
Task 5: Gap Analysis	5%	80%	100%	5%
Task 6: Implementation Strategies	5%			
Task 7: Training	5%			
Progress Reports				
Final Report				
TOTAL	100%			70%

1. Progress this quarter by task:

Task1: This task is complete.

Tasks 2 and 3: We have completed these tasks for the sites given to us by NJDOT. .

Task 4:

We are spending considerable amount of time on this task due the following major developments:

- None of the adaptive control strategies tested in this project namely, SCOOT, SCATS, and OPAC, could be obtained from the developers of the FHWA. This was not anticipated when we started the project but in time it became apparent that these adaptive traffic control programs were not available. The communication details with the developers can be made available if needed.
- This lack of cooperation from the developers created unexpected delays and we are still working on the calibration and design of these algorithms so that they can be tested for the intersections given to us by NJDOT.

Task 3: The software portion of the DSS was documented, a user manual was prepared

2. Proposed activities for next quarter by task

Task 4: Continue the work on implementing SCATS, SCOOT, and OPAC for different types of geometries and traffic conditions.

Task 6: We will continue working on developing guidelines for implementation strategies. The prototype expert system program will be programmed based on the developed rule base.

3. List of deliverables provided in this quarter by task (product date)

4. Progress on Implementation and Training Activities

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5. Problems/Proposed Solutions

- Although, the percentage change in terms of tasks completed is quite small, this is due to the need for revising some of the models we developed in the previous quarters. However, the amount of work done during this quarter is still considerable.
- It is becoming clear that the adaptive signal strategies such as SCOOT and SCATS are not readily available for us to implement in Paramics. This considerably slows down our progress since we have to build algorithms similar to these and then program them.
- Also, it is clear that we need to use CORSIM for RT-TRACS algorithms since they are only available for CORSIM. This was a totally new step for our research.
- We have also introduced hardware-in-the-loop concept.
- One new problem is the fact that we have to use different simulation packages for different types of evaluations. Thus, we are now trying to compare the results obtained from different software packages to ensure that the final results are compatible.
- Delay in having these algorithms implemented delays the whole project, especially the DSS part. That is why we requested 1 year no-cost extension.
- There is a considerable delay between the official starting date of the project and the actual starting date, date when the account is set-up and students can be hired. This time lag also affects the availability of students. Now we have all the student we need, however, the time lag can cause some delay at the end of the project.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$318,458.00
Total Project Expenditure to date		\$245,759
% of Total Project Budget Expended		77%
Task Order Number/Study Number:		101 / 4-26682
Current Task Order Budget (# of years)	Year 1 and 2	\$318,458.00
Actual Expenditure to date against current task order		\$245,759
% of current task order budget expended		77%

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QUARTERLY PROGRESS REPORT

Project Title:	Life Cycle Cost Analysis		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Richard Weed		
TASK ORDER NUMBER/Study Number: 91 / 4-23942	PRINCIPAL INVESTIGATOR: Kaan Ozbay & Neville Parker		
Study Start Date: 06/09/2000 Study End Date: 6/30/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
First Year				
1. Review of Existing LCCA Procedures in NJDOT and other DOTs	30%	40%	100%	30%
2. Study of the LCCA Input Parameters from both Economics and Engineering Perspectives	30%	20%	1000%	30%
3. Preliminary Documentation of the LCCA Process	20%	20%	100%	20%
4. Workshop on the LCCA Process	10%	50%	50%	5%
5. Interim Report	10%	10%	100%	10%
TOTAL (First Year)	100%			95%
Second Year				
6. Development of Preliminary LCCA Guidelines	40%	30%	100%	40%
7. Development of Illustrative Case Studies	30%	20%	100%	30%
8. Guidelines and Case Study Workshop	10%	50%	100%	5%
9. Finalization of LCCA Guidelines	10%	40%	100%	10%
10. Final Report	10%	40%	100%	10%
TOTAL (Second Year)	100%	20%	20%	95%

Note: Tasks are based on the revised proposal submitted on

1. Progress this quarter by task:

Task 10: Final report is edited and completed.

We obtained a no cost extension to complete the final report and conduct the workshop.

Task 4 of the first year and Task 8 of the second year are combined to offer a combined workshop along with case studies.

2. Proposed activities for next quarter by task

Modifications to the final report based on the comments of the reviewers.

4. Progress on Implementation and Training Activities

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5. Problems/Proposed Solutions

- Based on then input we received in the last quarterly report, we asked and received a no cost extension.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$204,495.00
Total Project Expenditure to date		\$178,975
% of Total Project Budget Expended		88%
Task Order Number/Study Number:		91 / 4-23942
Current Task Order Budget (# of years)	Year 1 and 2	\$204,495.00
Actual Expenditure to date against current task order		\$178,975
% of current task order budget expended		88%

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QUARTERLY PROGRESS REPORT

Project Title:	Evaluation Study of the NJ Turnpike Authority's Value Pricing Initiative		
RFP NUMBER:		NJDOT RESEARCH PROJECT MANAGER: Nancy Ciaruffoli	
TASK ORDER NUMBER/Study Number: 114 / 4-26514		PRINCIPAL INVESTIGATOR: Kaan Ozbay	
Study Start Date: 01/01/2002 Study End Date: 12/31/2004		Period Covered: 2 nd Quarter 2003	

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5%	25%	75%	7.5%
Task 1: Collect socio-economic characteristics of the users.	10%	15%	15%	1.5
Task 2: Identification of toll structure changes.	2.5%	100%	100%	2.5
Task 3: Traffic data collection.	5%			
Task 4: Assess impacts on users.	5%			
Task 5: Monitor media and decision-makers' reaction to value pricing	2.5%			
Tasks 6-7: Assemble panel of users. Collect travel behavior data.	20%			
Tasks 8-9: Behavioral modeling. Estimation of econometric parameters.	10%			
Task 10: Traffic modeling.	10%			
Task 11: Estimate congestion levels and travel time savings/losses for before and after conditions.	10%			
Task 12 : Estimate environmental impacts for before and after conditions.	5%			
Tasks 13-14: Estimate economic value of travel time savings. Differential impacts among user classes.	5%			
Final Report	10%	0%	0%	0%
TOTAL	100%			11.5%

1. Progress this quarter by task:

- Task 1; Worked on the possible questions for the focus groups and surveys.
- Task 2: We reviewed previous value pricing projects and related literature.
- Task 3: We arranged a meeting with NJ Turnpike on the 19th of June, 2003. Professor Ozbay, Martin Robbins will attend the meeting. This meeting will be mainly a kick off meeting where we will discuss data issues.

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2. Proposed activities for next quarter by task

Kick off meeting with New Jersey Turnpike
Obtain traffic data
Work on the development of surveys and focus group questions
Work on a preliminary behavioral and traffic model to assess the impacts of value pricing

3. List of deliverables provided in this quarter by task (product date)

4. Progress on Implementation and Training Activities

5. Problems/Proposed Solutions

We received the final task order from NJDOT in order to start the work.

6. Budget Summary*

Total Project Budget(# of years)	1 Year	\$ 559,618.00
Total Project Expenditure to date		\$17,132
% of Total Project Budget Expended		3%
Task Order Number/Study Number:		114 / 4-26514
Current Task Order Budget (# of years)	Year 1	\$ 559,618.00
Actual Expenditure to date against current task order		\$17,132
% of current task order budget expended		3%

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QUARTERLY PROGRESS REPORT

Project Title:	Investigation into Modified Asphalt Binders for Improved Pavement Performance		
RFP NUMBER:	NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel		
TASK ORDER NUMBER/Study Number: Task Order No. 80 / 4-23908	PRINCIPAL INVESTIGATOR: Dr. Ali Maher		
Study Start Date: 02/01/2000 Study End Date: 01/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	10%	50%	100%	10%
1. Material Collection	5%	25%	100%	5%
2. Laboratory Testing	50%	20%	100%	50%
3. Calibration	15%	10%	100%	15%
4. Reporting	20%	10%	95%	19%
Final Report				
TOTAL	100%			99%

1. Progress this quarter by task:

- A. The Simple Shear at Constant Height (SSCH) and Frequency Sweep at Constant Height (FSCH) testing of long term oven-aged samples finished. The SSCH were run at 4, 20, and 40C, and the FSCH were tested at 20, 40, 52C, identical temperatures to the short term oven-aged samples. Results of the SSCH showed that the creep properties at low temperatures stiffened while remaining similar at intermediate and higher temperatures (20 and 40C). Results from the FSCH testing showed a shear modulus (G*) increase when tested at 20C, however, at 52C, the stiffness of the aged samples showed a lower G* than the unaged samples. The G* comparisons at 40C was mixed. Only the two PG76-22 mixes showed to have no significant G* decrease when tested at higher temperatures. Another illustration of the hardening at low temperatures and softening at high temperatures was supported by evaluating the phase angle values. The phase angle is the delay in response due to an applied load. For an elastic material (HMA at cold temperatures) the phase angle approaches zero and for a viscous material (HMA at high temperatures) the phase angle approaches 90 degrees. At low temperatures, the phase angle of the aged samples decreased, indicating that the material was becoming stiffer. However, at higher temperatures, the phase angle of the aged samples was larger than that of the unaged samples, indicating that the material was behaving more viscous or softening. It was originally thought that the conflicting results between the SSCH and the FSCH was due to the different test temperatures. Therefore, to evaluate if the stiffness of the mixes actually did decrease at higher temperatures, Repeated Shear at Constant Height (RSCH) tests were conducted at 64C. The results of the RSCH testing statistically showed little difference between the aged and unaged samples. Therefore, something is effecting the FSCH G* and not the SSCH and RSCH results. To aid in this evaluation, experts in the industry were contacted. Ray Bonaquist from Advanced Asphalt Technologies, John Harvey from the University of California, Berkeley, Rebecca McDaniel from the Northeast Superpave Center, and Terhi Pellinen from Purdue University. The following were comments from each:

Ray Bonaquist – Believed that errors due to FSCH testing at temperatures 52C and above was the main cause. The FSCH requires 0.01% shear strain and at high test temperatures, this does not relate to large applied stresses. Since a certain amount of load is required to move the shear table, the actual

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stress measured from the load cell may just be the required movement load since the asphalt mix is soft at these temperatures.

John Harvey – Believed that the decrease in small strain stiffness may be due to the some type of binder/additive separation during oven aging process. He suggested that there may be change in the phases of the binder/additive at the elevated temperatures at prolonged time periods. Unfortunately, as we further discussed the problem, he also realized that all additives were added to the sample PG64-22 which also exhibited the decrease in stiffness when tested neat.

Rebecca McDaniel – Unfortunately had little experience on FSCH testing of aged samples, especially at elevated temperatures. She graciously arranged further discussions with Terhi Pellinen.

Terhi Pellinen – After reviewing a summary of the data was convinced that the material stiffness does soften due to the aging. However, she believes that it is more due to the development of micro-cracks within the HMA, than actual softening. The FSCH is conducted at low shear strains (0.01%), which for a 50 mm thick sample correlates to 0.005 mm of shear deformation. What may be occurring is that a portion of the 0.005 mm is actually taken up by the closing of the micro-cracks. Therefore, less stress is needed to deform the sample 0.01% which results in a lower G*. As opposed to the SSCH and RSCH, which when compared to the FSCH, are larger strain tests, although both are conducted in a stress-controlled environment. The SSCH, when tested at 40C, may achieve maximum shear strains of 0.1 to 0.6%, which relates to 0.05 to 0.3 mm in deformation, over 10 times larger than the FSCH.

This larger strain may overcome the influence of the micro-crack.

Further answers are being sought.

2. Proposed activities for next quarter by task:

- A. All testing has been completed, as well as the statistical analysis. The report is being finalized and will be given to a proof reader to correct grammar and structure.

3. List of deliverables provided in this quarter by task (product date)

N.A.

4. Progress on Implementation and Training Activities

N.A.

5. Problems/Proposed Solutions

N.A.

6. Budget Summary*

Total Project Budget(# of years)	3 Years	\$213,544.00
Total Project Expenditure to date		\$212,765
% of Total Project Budget Expended		100%
Task Order Number/Study Number:		80 / 4-23908
Current Task Order Budget (# of years)	Years 1, 2, and 3	\$213,544.00
Actual Expenditure to date against current task order		\$212,765
% of current task order budget expended		100%

* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.



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QUARTERLY PROGRESS REPORT

Project Title:	The Development of a Performance Specification for Granular Base and Subbase Material		
RFP NUMBER:			NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel
TASK ORDER NUMBER/Study Number: Task Order No. 83 / 4-23914	PRINCIPAL INVESTIGATOR: Dr. Ali Maher		
Study Start Date: 03/01/2000 Study End Date: 08/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5%	25%	100%	5%
1. Material Collection	5%	40%	100%	5%
2. Laboratory Testing	60%	10%	85%	51%
3. Calibration	10%	10%	65%	6.5%
4. Reporting	20%	10%	30%	6%
Final Report				
TOTAL	100%			73.5%

1. Progress this quarter by task:

- A. It was decided to start the permanent deformation testing before the resilient modulus testing, therefore, permanent deformation testing under a cyclic triaxial mode was being used. Each sample is confined with 15 psi of air pressure with a 45 psi cyclic deviatoric stress applied for 100,000 loading cycles. The permanent deformation at 100,000 cycles is used to compare the permanent deformation potential of the different materials. It was decided to conduct the permanent deformation testing since earlier work by the investigators showed that parameters from a standard triaxial test may be able to be used as an indicator of the permanent deformation test performance. Therefore, comparisons of the two tests wanted to be made. It is anticipated that by the time of the quarterly meeting, most, if not all of the permanent deformation testing will be finished, analyzed, and available for review.
- B. Due to the need for alternate tests to correlate to resilient modulus parameters, CBR testing has started on the materials. The CBR values will be used to help develop correlations for resilient modulus to be used in the upcoming Pavement Design Guide.

2. Proposed activities for next quarter by task:

- A. Start and finish resilient modulus testing.

3. List of deliverables provided in this quarter by task (product date)

N.A.

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4. Progress on Implementation and Training Activities

N.A.

5. Problems/Proposed Solutions

N.A.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$286,041.00
Total Project Expenditure to date		\$277,053
% of Total Project Budget Expended		97%
Task Order Number/Study Number:		83 / 4-23914
Current Task Order Budget (# of years)	Year 1 and 2	\$286,041.00
Actual Expenditure to date against current task order		\$277,053
% of current task order budget expended		97%

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QUARTERLY PROGRESS REPORT

Project Title:	Rut Testing of Hot Mix Asphalt		
RFP NUMBER:			NJDOT RESEARCH PROJECT MANAGER: Mr. Nicholas Vitillo
TASK ORDER NUMBER/Study Number: Task Order No. 98 / 4-26677			PRINCIPAL INVESTIGATOR: Dr. Ali Maher
Study Start Date: 01/01/2001 Study End Date: 3/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search/Local Agency Survey	10%	25%	100%	10%
Lab Testing for Rutting Criteria	25%	20%	100%	25%
Lab Testing for NJ HMA Characterization	25%	15%	80%	20%
Lab Testing for SUPERPAVE vs Marshall	20%	10%	70%	14%
Field Calibration/Evaluation	10%	10%	35%	3.5%
Final Report	10%	10%	45%	4.5%
TOTAL	100%			77%

1. Progress this quarter by task:

- A. The final report for the APA Rutting Criteria was completed and given to the NJDOT. It was returned with needed corrections and these corrections are being finished for final submission.
- B. The Low Volume road section of the project is currently working on the fourth mix design. The first mix was just used as a "learning curve" mix due to the extreme fluctuations in aggregate gravities from the source quarry. The second mix design resulted in the Superpave and Marshall design methods indicating the same optimum asphalt content, while the third design should a difference of 0.4% binder. Gyratory samples were being made of this mix when problems occurred with the gyratory compactor. Currently, the compactor is being fixed at Interlaken Technologies (in Minnesota) because the device required a new gyration loading piston. Troxler will be providing RAPL with a loaner gyratory machine for the next year until their new model comes out. RAPL was in the midst of looking to purchase a new gyratory machine, with the Troxler model being less expensive than the Pine, however, the current Troxler model can not compact a sample of needed height for the dynamic modulus test. Troxler agreed to provide RAPL with another gyratory machine for free until their newer model comes out later this year. However, the Marshall design verification has started on the fourth job mix formula. Marshall samples are being made at 5.0, 5.5, 6.0, and 6.5% binder content, as well as at the optimum binder content of 5.7%. This allows for the comparison the job mix formula (JMF) Marshall volumetrics, as well as providing data to conduct a new mix design if the JMF parameters are not obtained.

2. Proposed activities for next quarter by task:

- A. The final reviewed report for the APA Rutting Criteria will be finished and submitted.
- B. The fourth Low Volume Road mix should be completed and the fifth mix started. The comparisons between the Marshall design and the Superpave designs will continue.

3. List of deliverables provided in this quarter by task (product date):

N/A

4. Progress on Implementation and Training Activities:

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N/A

5. Problems/Proposed Solutions:

N/A

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$321,867.00
Total Project Expenditure to date		\$270,402
% of Total Project Budget Expended		84%
Task Order Number/Study Number:		98 / 4-26677
Current Task Order Budget (# of years)	Year 1 and 2	\$321,867.00
Actual Expenditure to date against current task order		\$270,402
% of current task order budget expended		84%

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QUARTERLY PROGRESS REPORT

Project Title:	Development and Evaluation of Geotechnical Design Parameters Using the Seismic Piezocone		
RFP NUMBER:			NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel
TASK ORDER NUMBER/Study Number: 88-04 / 4-23932			PRINCIPAL INVESTIGATOR: Dr. Ali Maher
Study Start Date: 06/01/2000 Study End Date: 9/30/2001	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	10%	100%	100%	10%
1. Field Testing	40%	5%	100%	40%
2. Laboratory Testing	20%	5%	100%	20%
3. Calibration	10%	5%	100%	10%
4. Reporting	20%	30%	100%	20%
Final Report				
TOTAL	100%			100%

1. Progress this quarter by task:

The final-final corrections have been completed and a proof reader conducting an overview.

2. Proposed activities for next quarter by task:

A. Completed

3. List of deliverables provided in this quarter by task (product date)

N.A.

4. Progress on Implementation and Training Activities

N.A.

5. Problems/Proposed Solutions

N.A.

6. Budget Summary*

Total Project Budget(# of years)	1 Year	\$30,000.00
Total Project Expenditure to date		\$29,965
% of Total Project Budget Expended		100%
Task Order Number/Study Number:	88-04 / 4-23932	
Current Task Order Budget (# of years)	Year 1	\$30,000.00
Actual Expenditure to date against current task order		\$29,965
% of current task order budget expended		100%

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QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Poisson's Ratio		
RFP NUMBER:			NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel
TASK ORDER NUMBER/Study Number: Task Order No. 128 / 4-26531	PRINCIPAL INVESTIGATOR: Thomas Bennert		
Study Start Date: 01/1/2003 Study End Date: 12/31/2004	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search/Sensitivity Analysis	10%	50%	50%	5%
1. Material Collection	5%	67%	100%	5%
2. Laboratory Testing	65%	5%	5%	3.25%
3. Calibration	10%	0%	0%	0%
4. Reporting	10%	0%	0%	0%
Final Report				
TOTAL	100%			13.25%

1. Progress this quarter by task:

- A. During the initial calibration of the synthetic samples, problems occurred with the testing set-up. The design used LVDT's protruding horizontally through the side of the confining chamber. This set-up was designed to allow the LVDT's to be placed directly at the center of the sample and could be adjusted during testing if needed. Unfortunately, initial calibration showed severe leaks around the threaded sections where the LVDT's were inserted. Further modifications were made but only slight improvements were found. To overcome this, new LVDT holders were designed and are currently being fabricated. The holders will be placed inside the chamber, instead of screwing through the side of the chamber walls. The holders are also adjustable to slide up and down guide rails, so they can be easily used for at height specimen. It is anticipated that testing should resume by the end of June.

2. Proposed activities for next quarter by task:

- A. Initial calibration of equipment using synthetic samples. New LVDT holders will be evaluated and modifications made if needed.

3. List of deliverables provided in this quarter by task (product date)

N.A.

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4. Progress on Implementation and Training Activities

N.A.

5. Problems/Proposed Solutions

N.A.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$426,111
Total Project Expenditure to date		\$32,591
% of Total Project Budget Expended		8%
Task Order Number/Study Number:		128 / 4-26531
Current Task Order Budget (# of years)	Year 1 and 2	\$426,111
Actual Expenditure to date against current task order		\$32,591
% of current task order budget expended		8%

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QUARTERLY PROGRESS REPORT

Project Title:	Development of Airport Obstruction Identification System		
RFP NUMBER:		NJDOT RESEARCH PROJECT MANAGER: Ed Kondrath	
TASK ORDER NUMBER/Study Number: 115 / 4-26857		PRINCIPAL INVESTIGATOR: Patrick Szary	
Study Start Date: 01/1/2002 Study End Date: 12/31/2003		Period Covered: 2 nd Quarter 2003	

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
1. Literature Search	10%	0%	100%	10%
2. Develop criteria	5%	0%	100%	5%
3. Evaluate the cost effectiveness	8%	15%	90%	7.2%
4. Conduct laboratory experiments	5%	10%	60%	3%
5. Conduct laboratory/field experiments	15%	5%	70%	10.5%
6. Develop prototype software	25%	30%	70%	17.5%
7. Demonstrate field test system	5%	0%	0%	0%
8. Redesign a new prototype	5%	30%	60%	3%
9. Demonstrate prototype system	5%	0%	0%	0%
10. Train NJDOT personnel	7%	0%	0%	0%
11. Final Report	10%	10%	0%	1%
TOTAL	100%			57.2%

1. Progress this quarter by task:

- A. The go ahead was given for the purchase of the home built system. This was the helicopter from Bergen RC in Michigan along with the various other components for each task.
- B. A GPS unit for the system was decided upon. The unit, SF2050 from Navcom GPS, provides all of the components that had been sought out for the system. It is a highly accurate unit, relatively small, and is reasonably priced. The unit will be sufficient for use with this project.
- C. Progress on this project to date has been documented in a preliminary report which will be the basis for the final project report submitted upon completion. This report will be e-mailed to NJDOT as a reference of all work completed to date.
- D. Upon evaluation of all the final selected components there was a weight concern. The home built system will not exceed the net working weight of the Bergen system but will come close. Thus we are cautious about the overall performance of the system. This required further investigation that we are actively pursuing.

2. Proposed activities for next quarter by task

- A. Buying the custom made RC helicopter along with a smaller RC helicopter for practice.
- B. Custom made helicopter field demonstration and building or modifying our prototype software based on our new data collector hardware.

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3. List of deliverables provided in this quarter by task (product date)

A. List of requirements for a custom made RC helicopter.

4. Progress on Implementation and Training Activities

A. Buying a RC helicopter for training. The consultant we will be working with will provide the training package for flying the RC equipment.

5. Problems/Proposed Solutions

A. Ability of the NJDOT personnel to learn to fly an RC helicopter because it is considered a difficult task. Thus it is critical to begin training as soon as the GPS selection is made to allow enough training time prior to the development and delivery of the final system.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$210,000.00
Total Project Expenditure to date		\$76,481
% of Total Project Budget Expended		36%
Task Order Number/Study Number:		115 / 4-26857
Current Task Order Budget (# of years)	Year 1 and 2	\$210,000.00
Actual Expenditure to date against current task order		\$76,481
% of current task order budget expended		36%

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QUARTERLY PROGRESS REPORT

Project Title:	New Jersey State LTAP Technology Transfer Center		
RFP NUMBER:		NJDOT RESEARCH PROJECT MANAGER: Nicholas Vitillo	
TASK ORDER NUMBER/Study Number:		PRINCIPAL INVESTIGATOR: Dr. Ali Maher	
Study Start Date:	01/01/2003	Period Covered: 2nd Quarter 2003	
Study End Date:	12/31/2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Activity				
1. Compile and Maintain Mail List	1.88		97.63	1.84
2. Publish Monthly Newsletter	10.30		95.29	9.81
3. Distribute Technology Transfer Materials	15.45		71.47	11.05
4. Provide Technical Assistance	34.25		57.63	19.74
5. Provide Training	33.31		66.17	22.04
6. Evaluate Effectiveness of Program	4.81		0	0
Final Report				
TOTAL				64.47

1. Progress this quarter by task:

A. Compile and Maintain Mail List

The mail list has been updated to include approximately 8,000 contacts in municipal, county, state and federal government, as well as other transportation entities. County and municipal planners in the State of New Jersey were added to the mail list during this quarter.

B. Publish Monthly Newsletter

Three newsletters were published this quarter. Newsletter distribution occurred via email, and is available in three forms: within the email, attached to the email in PDF format, and posted online at the LTAP web page. All subsequent issues are archived under the training library contents on the web page.



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Volume 5, Number 4 was published in April 2003. This issue featured an article about the United States House Transportation Committee leaders' support of a higher gas tax under the TEA -21 reauthorization proposal, the removal of the EPA's 2002 Total Maximum Daily Load rule, and the 3rd Annual Work Zone Safety Conference. In addition, a training calendar, events calendar, and Storm Water Enhancement Seminar announcement were included. The monthly "*Free for the Asking*" offering was "*Survey of Speed Zoning Practices*" published by the Institute of Transportation Engineers.

Volume 5, Number 5 was published in May 2003. The fifth newsletter of this year included an article on TEA -21 reauthorization principles for local officials, the approval of \$24 million in scenic byways grants for 42 states and, also, events and course schedules, as well as a "*Free for the Asking*" offering were included.

Volume 5, Number 6, was published in June 2003. This issue featured information on the 2003 National Public Works Week, TEA -21 Reauthorization, an upcoming events calendar, updated training schedules, and a "*Free for the Asking*" offering entitled "*Highway Traffic Operations and Freeway Management: State of the Practice*". In addition, a solicitation for prospective LTAP course instructors was included.

C. Distribute Technology Transfer Materials

Technology transfer materials were distributed during training seminars, workshops, and free for the asking requests. Course materials, work zone safety pocket guides, technical publications, and reference materials from the lending library were made available. 7,035 individuals received each issue of the newsletter. In addition, 1,010 technical publications and manuals were distributed this quarter. Aside from training materials, these included retro-reflective sheeting identification guides, speed management resources packets and technical reports.

D. Provide Technical Assistance

There were 432 instances of technical assistance provided by LTAP staff. Requests were made via telephone, mail, e-mail, and fax.

E. Provide Training

Training was provided to 234 individuals via 15 programs during the April-June quarter. Program areas were composed of Road Scholar I, Road Scholar II, Traffic Control Coordinator and a continuing education seminar entitled "*Storm Water Quality Enhancement*".



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F. Evaluate Effectiveness of Program

Program effectiveness was measured by course evaluations for each course and each instructor. Participants rated the over all quality of courses, instructors, and course content at or above their expectations. The quarterly meeting (May 2003) of the Local Technical Assistance Program Advisory Committee also served as an analysis of program activities.

2. Proposed activities for next quarter by task

A. Compile and Maintain Mail List

Contact information will continue to be added to, and revised, on a continual basis.

B. Publish Monthly Newsletter

Newsletters will be published monthly. The newsletter will be continually offered online in both html and PDF formats, and in a simple email format.

C. Distribute Technology Transfer Materials

Technology transfer materials will be distributed during training programs, conferences and trade shows. The “Free for the Asking” component of the newsletter will continue to offer select technical publications free of charge. The lending library is always available.

D. Provide Technical Assistance

Technical assistance will be provided for any inquiries made via telephone, fax, or e-mail to the LTAP staff.

E. Provide Training

Training programs for the next quarter will be provided for the Public Works Road Scholar I and Public Works Road Scholar II Programs, and the Public Works Academy. The 3rd Annual Local Technical Assistance Program Research Showcase is being developed, as is a fall continuing education seminar. Also, a Train the Trainer program for prospective instructors is being planned for July 2003.

F. Evaluate Effectiveness of Program

Course evaluations will be completed at each training program for each instructor. Follow-up course surveys for participants are under development. The quarterly meeting of the Advisory Committee will also reflect evaluation of program activities.



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3. List of deliverables provided in this quarter by task:

(product date)

Newsletter:

Volume 5, Number 4
Volume 5, Number 5
Volume 5, Number 6

April 2003
May 2003
June 2003

Training Programs:

Traffic Control Coordinator Program
Winter Maintenance, Road Scholar I
Preventive Maintenance, Road Scholar I
Drainage Maintenance: The Key to Roads that Last, Road Scholar I
Asphalt Roads: Common Maintenance Problems
Excavation and Trenching Safety, Road Scholar I
Confined Space and Excavation Rescue, Road Scholar I
Personal Injury Prevention Techniques, Road Scholar I
Worker and Equipment Safety, Road Scholar
Storm Water Quality Enhancement Seminar
Hazards Associated with Fertilizers, Insecticides and Herbicides, Road Scholar I
Grounds Maintenance Safety, Road Scholar I
Low Cost Surface Rehabilitation, Road Scholar I
Hot Mix Asphalt Resurfacing, Road Scholar I
Superior Performing Asphalt Pavements, Road Scholar II

April 8-11, 2003
April 9, 2003
April 9, 2003
April 16, 2003
April 16, 2003
April 23, 2003
April 23, 2003
April 30, 2003
April 30, 2003
May 1, 2003
May 7, 2003
May 7, 2003
May 21, 2003
May 21, 2003
June 4, 2003

4. Progress on Implementation and Training Activities

N.A.

5. Problems/Proposed Solutions

N.A.

6. Budget Summary*

Total Project Budget(# of years)	\$275,000
Total Project Expenditure to date	\$190,792
% of Total Project Budget Expended	69%
Task Order Number/Study Number:	
Current Task Order Budget (# of years)	\$275,000
Actual Expenditure to date against current task order	\$190,792
% of current task order budget expended	69%

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QUARTERLY PROGRESS REPORT

Project Title:	New Jersey Local Congestion, Safety, Security Initiative		
RFP NUMBER:	NJDOT/FHWA RESEARCH PROJECT MANAGER(S): Nazhat Aboobaker/William Hoffman		
TASK ORDER NUMBER/Study Number: Task Order No. 132 / 4-26993	PRINCIPAL INVESTIGATOR: Ali Maher/Joe Orth		
Study Start Date: 12/11/2002 Study End Date: 12/11/2004	Period Covered: 2nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
1.1 Literature Search	15	33	33	66
1.2 Present NJDOT/FHWA	5	0	0	0
2.1 Survey Customers	30	15	15	50
3.1 Crash Data Training	6.25	20	20	1.2
3.2 Identify/Provide Tools	6.25	10	10	1
3.3 Provide Emergency Response Training	6.25	0	0	0
3.4 Promote Congestion Mitigation	6.25	0	0	0
3.5 Introduce Congestion Best Practices	6.25	6.25	6.25	100
3.6 Explore Mass Transit Alternatives	6.25	5	5	.5
3.7 Facilitate Safety and Security	6.25	0	0	0
3.8 Personnel Safety Training	6.25	0	0	0
TOTAL	100			

1. Progress this quarter by task:

A. The Safety Literature Review was completed and distributed to NJDOT & FHWA for review.

- a. The findings included a major emphasis on the use of Crash Data to drive funding for transportation projects. During the past, Roadway Safety had been split with NTHSA addressing behavioral and enforcement issues, while FMCSA concentrated on driver fatigue, hazardous materials, and vehicle safety; while FHWA focused on engineering design and maintenance safety. TEA -21 now requires that the DOT's begin working with the MPOS to include safety and security in their plans.
- b. Also, the Safety Conscious Planning Model was introduced as a new program that integrates all aspects of transportation safety. It fits the scope of the CSS Initiative which addresses safety, security, and congestion on both the state and local levels.

B. A CSSI Meeting was held on 5/21/03 between FHWA, NJDOT, and Rutgers CAIT-LTAP representatives. The agenda included an update of the grant activities, discussion of the Literature Review, introduction of the Safety Conscious Planning Model, review of the NJ Safety Survey, and other business.

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- a. Update of Grant Project:** The meeting began with an overview of the grant activities. Nearly seventy percent of the literature review has been completed with only the Security section still outstanding. One third of the library has been reorganized to include the additional FHWA publications. The Police Work Zone Safety Program, qualifying as Congestion Management training, is currently being offered in Bergen, Gloucester, and Cumberland Counties. There are approximately 30 participants per section in Mahwah and Sewell; while Vineland has attracted 20 participants. The scope of the program includes Basic Work Zone Training, New Jersey Specific Regulations, Managing the Content, and an update of the MUTCD regulations.
- b. Literature Review:** See above.
- c. Discussion of Safety Conscious Planning Model:** The Safety Conscious Planning Model is a new program, developed by FHWA that integrates transportation safety and engineering. It fits the scope of the CSS Initiative, which addresses safety, security, and congestion on both the State and Local levels. Also, the MPOs are directly involved in the process. The concept evolved in 2000 when several transportation officials met to develop statewide safety integration. The Safety Conscious Planning Concept evolved and forums were initially held in five states that yielded input for a national model.
- d. Survey Plan:** There was a lengthy discussion on who would be receiving the CSSI survey. Several public sector representatives were mentioned, but it was agreed upon that only the Business Administrators and/or Municipal Clerks would become the targeted group so that the feedback remains consistent. It was agreed upon that a statewide distribution was necessary in order to create a baseline description for safety initiatives. Also, a web based was discussed as a means of analyzing the data, immediately. Work will soon begin on the interactive web page that is linked to the GIS system.

2. Proposed activities for next quarter by task

CSS Initiative Programs	
Activity	Projected Time Period
Visit to SJTPO	June
Survey Letter to MPOs	Late June
Visit Comparable State	June
Visit NJDOT Personnel	July
Survey Distribution	July
Electronic Data Analysis	August
Completion of Literature Review	August
Preparation of Presentation for Showcase	September

- a) Continue Literature Search
- b) Report regularly on current state of practice to the executive board
- c) Begin with survey
- d) Meet with various stakeholders

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3. List of deliverables provided in this quarter by task (product date)

Draft of Safety Literature Review
CSS Initiative Survey

4. Progress on Implementation and Training Activities

Completed Police Work Zone Safety Training Program (5/6-5/29/03)

5. Problems/Proposed Solutions

1. Problem: Gaining Support for Safety Conscious Planning Model

Solution: FHWA will arrange a meeting with SJTPO to pilot program in that region. After project is complete, other MPO's will likely be more receptive to concept.

2. Problem: Safety & Security literature must be reviewed relative to post 9/11 outcomes.

Solution: Rutgers personnel should visit successful Safety Conscious Planning Programs that were established after 9/11/01 because security will more likely be included in safety or congestion management.

6. Budget Summary*

Total Project Budget (# of years)	1 and 2 Year	\$ 741,836
Total Project Expenditure to date		\$33,825
% of Total Project Budget Expended		4.6%
Task Order Number/Study Number:		132 / 4-26993
Current Task Order Budget (# of years)	Year 1 and 2	\$ 741,836
Actual Expenditure to date against current task order		\$33,825
% of current task order budget expended		4.6%

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QUARTERLY PROGRESS REPORT

Project Title:	Implementation of Weigh-In-Motion (WIM) Systems		
RFP NUMBER:	NJDOT RESEARCH PROJECT MANAGER: Nick Vitillo		
TASK ORDER NUMBER/Study Number: 92 / 4-23941	PRINCIPAL INVESTIGATOR: Dr. Ali Maher		
Study Start Date: 06/14/2000 Study End Date: 12/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	10%	0%	100%	10%
1. Packaging	17%	0%	95%	16.2%
2. Testing	14%	5%	90%	12.6%
3. Site Determination	11%	10%	70%	7.7%
4. Field Implementation & Calibration	16%	3%	45%	7.2%
5. Monitoring and Analysis	22%	0%	0%	0%
Final Report	10%	0%	0%	0%
TOTAL	100%			53.7%

1. Progress this quarter by task:

- A. We ordered new epoxy to place the sensor. The epoxy that we had previously ordered had expired and we needed to order new epoxy in order to perform the field placement.
- B. We did a layout of where the sensor will be installed and planned on exactly how we will proceed with the installation.
- C. A new student, Evans a mechanical engineering student, was brought in to help assist with some of the ongoing technical problems that have been causing delays. Evans has also begun training in the DAQ system in order to better help on the project.

2. Proposed activities for next quarter by task

- A. Install and collect data from the sensor.
- B. Analyze data.
- C. Prepare a preliminary draft final report.
- D. It is expected that we will have to submit a budget revision in order to complete the project.

3. List of deliverables provided in this quarter by task (product date)

N/A

4. Progress on Implementation and Training Activities

N/A

5. Problems/Proposed Solutions

- A. Calibration of the sensor will be difficult. The voltages produced by the sensor will be measured accurately but what exactly that voltage means cannot be determined until a field calibration is calculated. The best thing would be to install our sensor near the static scale inside the weigh station, so we have good reference to our readings.

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-
- B. The problem could be the small air pockets that are left between sensor and wires while wrapping it with Teflon tape. These air voids could possibly have impact on readings.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$194,500.00
Total Project Expenditure to date		\$102,295
% of Total Project Budget Expended		53%
Task Order Number/Study Number:		92 / 4-23941
Current Task Order Budget (# of years)	Year 1 and 2	\$194,500.00
Actual Expenditure to date against current task order		\$102,295
% of current task order budget expended		53%

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QUARTERLY PROGRESS REPORT

Project Title:	The Future of Transportation Modeling			
RFP NUMBER: NJDOT 2001-19	NJDOT RESEARCH PROJECT MANAGER: Karl Brodtman			
TASK ORDER NUMBER/Study Number: 117 / 4-26856	PRINCIPAL INVESTIGATOR: Maria Boilé			
Study Start Date: 01/01/2002 Study End Date: 12/31/2003	Period Covered: 2 nd Quarter 2003			

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1 Detailed model comparison and development of a summary matrix	25%	3%	100%	25%
Task 2 Conduct a survey to determine the potential future transportation models	25%	15%	50%	12.5%
Task 3 Develop a plan to be followed by the Bureau of Technical Analysis if they wish to switch from their current models to others identified as future standards	20%	5%	10%	2%
Task 4 Implementation and Training	15%	10%	20%	3%
Task 5 Quarterly and final reports	15%	5%	50%	7.5%
TOTAL	100%			50%

1. Progress this quarter by task:

***Task 1:** The literature review summary report, the comparison of various software packages considered in this project and the summary matrix that had been produced and distributed during the previous quarter have been revised according to comments that have been received by the advisory board members. Additional comments are expected to be received from the RSIP. The software review information document has been updated and revised based on comments received by software developers and vendors.*

***Task 2:** The survey instrument has been finalized and the list of interviewees has been updated with suggestions made from the advisory board members. The questionnaire will be sent out to the interviewees within the next couple of weeks. A report on TRANSIMS has been produced. The report contains an overview of TRANSIMS and experiences from the Dallas-Ft. Worth and the Portland, Oregon case study applications.*

***Task 3:** The draft plan to be followed by the Bureau of Technical Analysis if they wish to switch from their current models to others, is being updated with the new information. A more complete draft of this document will be developed upon receipt and analysis of the survey results.*

***Task 4:** Team members are in contact with various software developers and vendors for the purpose of organizing a workshop on transportation modeling applications.*

2. Proposed activities for next quarter by task

The survey will be conducted and the results will be summarized in a report. The plan to be followed by the Bureau of Technical Analysis will be updated based on the survey results. Further contacts will be made and official workshop invitations will be sent out.

3. List of deliverables provided in this quarter by task

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Revised survey instrument

Revised list of contacts and interviewees

Report on TRANSIMS.

4. Progress on Implementation and Training Activities

The idea of organizing a workshop on transportation modeling applications is being pursued further.

5. Problems/Proposed Solutions

N/A

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$ 125,124.00
Total Project Expenditure to date		\$96,483
% of Total Project Budget Expended		77%
Task Order Number/Study Number:		117 / 4-26856
Current Task Order Budget (# of years)	Year 1 and 2	\$ 125,124.00
Actual Expenditure to date against current task order		\$96,483
% of current task order budget expended		77%

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QUARTERLY PROGRESS REPORT

Project Title:	Estimation of Truck Volume and Flows		
RFP NUMBER: NJDOT 2001-18	NJDOT RESEARCH PROJECT MANAGER: Nicholas Vitillo		
TASK ORDER NUMBER/Study Number: 116 / 4-26855	PRINCIPAL INVESTIGATOR: Maria Boilé		
Study Start Date: 01/01/2002 Study End Date: 12/31/2003	Period Covered: 2 nd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	6%	-	100%	6%
Task 1 Data collection	8%	-	100%	8%
Task 2 List of major truck generating facilities	8%	-	100%	8%
Task 3 Criteria or factors that influence changes in truck flow	10%	-	100%	10%
Task 4 Relationships between ADT and truck volumes	16%	20%	75%	12%
Task 5 Methods to estimate truck flow and truck percentages	17%	15%	30%	5.1%
Task 6 Validate the estimation method on a selection of 12 routes	17%	15%	15%	2.55%
Task 7 Apply methodology on a statewide basis	8%	0%	0%	0%
Task 8 Quarterly progress and final reports	10%	10%	50%	5%
TOTAL	100%			56.65%

1. Progress this quarter by task:

Task 3 – The 12 roadway segments to be examined in this project have been selected based on data availability and representation of the roadway types specified in the RFP. The criteria and factors that influence changes in truck flow, which had been decided upon during the last meeting with the RSIP have been applied to the aggregation of the twelve roadway segments.

Task 4 – The initial dataset has been updated to include new employment related information. The statistical analysis was performed again. Several models have been tested and their statistical significance has been determined. Sensitivity analysis is also being performed. A final report on this task is being produced and will be submitted for review by the RSIP by the end of June.

Task 5 – Truck volumes and percentages have been estimated for the twelve roadway sections. The profile of these data for each of the roadways has been drawn and has been related to the criteria and factors that have been developed under task 3. These data are further analyzed to determine whether any general observations can be made regarding the relationship between the criteria and factors on one hand, and the observed volumes and truck

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percentages on the other. Furthermore, a method for estimating truck volumes based on the observed traffic on some sections of the network is being developed within a GIS framework.

Task 6 – A method for assessing the accuracy and validity of the results to be produced under tasks 4 and 5 is being devised.

2. Proposed activities for next quarter by task

The statistical analysis of Task 4 will be finalized and the results and findings will be presented in a technical report. In addition the methods and types of analyses that have been developed in Task 5 will be applied to the twelve roadway sections and the results will be presented in a technical report.

3. List of deliverables provided in this quarter by task (product date)

The final draft of the literature review and the revised technical reports on Tasks 1, 2 and 3 will be submitted by June 15.

4. Progress on Implementation and Training Activities

N/A

5. Problems/Proposed Solutions

N/A

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$ 198,508.00
Total Project Expenditure to date		\$111,195
% of Total Project Budget Expended		56%
Task Order Number/Study Number:		116 / 4-26855
Current Task Order Budget (# of years)	Year 1 and 2	\$ 198,508.00
Actual Expenditure to date against current task order		\$111,195
% of current task order budget expended		56%

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